

Atty. Ref. No. 030692

This Listing of Claims will replace all prior versions, and listings, of claims in this application:

Listing of Claims:

1. (cancelled)
2. (previously amended) An isolated polynucleotide molecule comprising a nucleotide sequence encoding the polypeptide sequence of SEQ ID NO:2.
3. (original) The isolated polynucleotide molecule of claim 2 comprising a nucleic acid having the sequence of SEQ ID NO:1.
4. (original) A vector comprising the isolated polynucleotide molecule of claim 2.
5. (original) A host cell comprising the vector of claim 4.
6. (previously amended) A method for transforming a *Corynebacterium* species host cell comprising:
  - (a) transforming a *Corynebacterium* species host cell with an isolated polynucleotide molecule comprising a nucleotide sequence encoding the polypeptide of SEQ ID NO: 2 and
  - (b) selecting a transformed host cell.
7. (previously amended) The method of claim 6 further comprising screening for said transformed polynucleotide molecule.
8. (previously amended) The method of claim 6 wherein said host cell possesses at least one of the following activities:
  - (a) aspartate-semialdehyde dehydrogenase activity;
  - (b) dihydroxipicolinate synthase activity,

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- (c) dihydridopicolinate reductase activity;
  - (d) diaminopimelate dehydrogenase activity; and
  - (e) diaminopimelate decarboxylase activity.
9. (previously amended) The method of claim 8 further comprising screening for said activity.
10. (previously amended) The method of claim 6, wherein said isolated polynucleotide molecule further comprises at least one of the following:
- (a) a nucleic acid molecule encoding the *dapA* amino acid sequence of SEQ ID NO:4;
  - (b) a nucleic acid molecule encoding the *dapA* amino acid sequence of SEQ ID NO:6;
  - (c) a nucleic acid molecule encoding the *dapB* amino acid sequence of SEQ ID NO 8;
  - (d) a nucleic acid molecule encoding the *ddh* amino acid sequence of SEQ ID NO: 10;
  - (e) a nucleic acid molecule encoding the *lysA* amino acid sequence of SEQ ID NO: 21;
  - (f) a nucleic acid molecule encoding the *lysA* amino acid sequence of SEQ ID NO: 14;
- and
- (g) a nucleic acid molecule encoding the *ORF2* amino acid sequence of SEQ ID NO: 16.

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11. (original) The method of claim 6, wherein said isolated polynucleotide molecule further comprises the following:
  - (a) a nucleic acid molecule encoding the *asd* amino acid sequence of SEQ ID NO:4;
  - (b) a nucleic acid molecule encoding the *dapA* amino acid sequence of SEQ ID NO:6;
  - (c) a nucleic acid molecule encoding the *dapB* amino acid sequence of SEQ ID NO: 8;

and

  - (d) a nucleic acid molecule encoding the *ORF2* amino acid sequence of SEQ ID NO:16.
12. (original) The method of claim 6, wherein said isolated polynucleotide molecule further comprises the following:
  - (a) a nucleic acid molecule encoding the *asd* amino acid sequence of SEQ ID NO:4;
  - (b) a nucleic acid molecule encoding the *dapA* amino acid sequence of SEQ ID NO:6;
  - (c) a nucleic acid molecule encoding the *dapB* amino acid sequence of SEQ ID NO: 8;
  - (d) a nucleic acid molecule encoding the *ddh* amino acid sequence of SEQ ID NO: 10;

and

  - (e) a nucleic acid molecule encoding the *ORF2* amino acid sequence of SEQ ID NO: 16.

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13. (original) The method of claim 6, wherein said isolated polynucleotide molecule further comprises the following:

(a) a nucleic acid molecule encoding the *asd* amino acid sequence of SEQ ID NO:4;

(b) a nucleic acid molecule encoding the *dapA* amino acid sequence of SEQ ID NO:6;

(c) a nucleic acid molecule encoding the *dapB* amino acid sequence of SEQ ID NO: 8;

(d) a nucleic acid molecule encoding the *ddh* amino acid sequence of SEQ ID NO: 10;

(e) a nucleic acid molecule encoding the *lysA* amino acid sequence of SEQ ID NO: 21; and

(f) a nucleic acid molecule encoding the *ORF2* amino acid sequence of SEQ ID NO: 16.

14. (original) The method of claim 6, wherein said isolated polynucleotide molecule further comprises the following:

(a) a nucleic acid molecule encoding the *asd* amino acid sequence of SEQ ID NO:4;

(b) a nucleic acid molecule encoding the *dapA* amino acid sequence of SEQ ID NO:6;

(c) a nucleic acid molecule encoding the *dapB* amino acid sequence of SEQ ID NO: 8;

(d) a nucleic acid molecule encoding the *ddh* amino acid sequence of SEQ ID NO: 10;

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(e) a nucleic acid molecule encoding the *lysA* amino acid sequence of SEQ ID NO: 14;

and

(f) a nucleic acid molecule encoding the *ORF2* amino acid sequence of SEQ ID NO: 16.

15. (original) The method of claim 6 further comprising:

(a) growing said transformed host cell in a medium; and

(b) purifying an amino acid produced by said transformed host cell.

16. (previously amended) An isolated polynucleotide molecule comprising:

(a) the polynucleotide molecule of claim 2; and

(b) at least one additional *Corynebacterium* species lysine pathway gene selected from the group consisting of:

(i) a nucleic acid molecule encoding the *asd* polypeptide of SEQ ID NO: 4;

(ii) a nucleic acid molecule encoding the *dapA* polypeptide of SEQ ID NO: 6;

(iii) a nucleic acid molecule encoding the *dapB* polypeptide of SEQ ID NO: 8;

(iv) a nucleic acid molecule encoding the *ddh* polypeptide of SEQ ID NO: 10;

(v) a nucleic acid molecule encoding the *lysA* polypeptide of SEQ ID NO: 21;

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- (vi) a nucleic acid molecule encoding the *lysA* polypeptide of SEQ ID NO: 14;

and

- (vii) a nucleic acid molecule encoding the *ORF2* polypeptide of SEQ ID NO: 16.

17. (cancelled).

18. (original) An isolated polynucleotide molecule comprising:

(a) the polynucleotide molecule of claim 2;

(b) a nucleic acid molecule encoding the *asd* amino acid sequence of SEQ ID

NO: 4;

(c) a nucleic acid molecule encoding the *dapA* amino acid sequence of SEQ

ID NO: 6;

(d) a nucleic acid molecule encoding the *dapB* amino acid sequence of SEQ

ID NO: 8;

and

(e) a nucleic acid molecule encoding the *ORF2* amino acid sequence of SEQ

ID NO: 16.

19. (original) An isolated polynucleotide molecule comprising:

(a) the polynucleotide molecule of claim 2;

(b) a nucleic acid molecule encoding the *asd* amino acid sequence of SEQ ID

NO: 4;

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(c) a nucleic acid molecule encoding the *dapA* amino acid sequence of SEQ ID NO: 6;

(d) a nucleic acid molecule encoding the *dapB* amino acid sequence of SEQ

ID NO: 8;

(e) a nucleic acid molecule encoding the *ddh* amino acid sequence of SEQ ID NO: 10; and

(f) a nucleic acid molecule encoding the *ORF2* amino acid sequence of SEQ

ID NO: 16.

20. (original) An isolated polynucleotide molecule comprising:

(a) the polynucleotide molecule of claim 2;

(b) a nucleic acid molecule encoding the *asd* amino acid sequence of SEQ ID NO: 4;

(c) a nucleic acid molecule encoding the *dapA* amino acid sequence of SEQ ID NO: 6;

(d) a nucleic acid molecule encoding the *dapB* amino acid sequence of SEQ ID NO: 8;

(e) a nucleic acid molecule encoding the *ddh* amino acid sequence of SEQ ID NO: 10;

(f) a nucleic acid molecule encoding the *lysA* amino acid sequence of SEQ ID NO: 21; and

(g) a nucleic acid molecule encoding the *ORF2* amino acid sequence of SEQ ID NO: 16.

21. (original) An isolated polynucleotide molecule comprising:

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- (a) the polynucleotide molecule of claim 2;
  - (b) a nucleic acid molecule encoding the *asd* amino acid sequence of SEQ ID NO: 4;
  - (c) a nucleic acid molecule encoding the *dapA* amino acid sequence of SEQ ID NO: 6;
  - (d) a nucleic acid molecule encoding the *dapB* amino acid sequence of SEQ ID NO: 8;
  - (e) a nucleic acid molecule encoding the *ddh* amino acid sequence of SEQ ID NO: 10;
  - (f) a nucleic acid molecule encoding the *lysA* amino acid sequence of SEQ ID NO: 14;
- and
- (g) a nucleic acid molecule encoding the *ORF2* amino acid sequence of SEQ ID NO: 16.
22. (original) The isolated polynucleotide molecule of claim 18 comprising pK 184-KDAB.
23. (original) The isolated polynucleotide molecule of claim 20 comprising pD11-KDABHL.
24. (original) The isolated polynucleotide molecule of claim 21 comprising pD2-KDABHL.
25. (original) A vector comprising the polynucleotide molecule of claim 16.
26. (original) A host cell comprising the vector of claim 25.

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27. (previously amended) The host cell of claim 26 wherein said host cell is a *Brevibacterium flavum* selected from the group consisting of *Brevibacterium flavum* NRRL-B30218, *Brevibacterium flavum* NRRL-B30219, *Brevibacterium lactofermentum* NRRL-B30220, *Brevibacterium lactofermentum* NRRL-B30221, *Brevibacterium lactofermentum* NRRL-B30222, *Brevibacterium flavum* NRRL-B30234 and *Brevibacterium lactofermentum* NRRL-B30235.
28. (original) The host cell of claim 26 wherein said host cell is *Escherichia coli* DH5  $\alpha$ MCR NRRL-B30228.
29. (original) The host cell of claim 26 wherein said host cell is a *C. glutamicum* selected from the group consisting of *C. glutamicum* NRRL-B30236 and *C. glutamicum* NRRL-B30237.

Claims 30-60 are cancelled.

61. (previously amended) The isolated polynucleotide molecule of claim 2 further comprising a promoter sequence where said promoter sequence has at least 95% sequence identity to SEQ ID NO: 17, wherein said promoter sequence controls expression of said polynucleotide.
62. (original) The polynucleotide of claim 61 where said promoter sequence has the nucleotide sequence of SEQ ID NO: 17.
63. (cancelled).
64. (original) A vector comprising the isolated polynucleotide of claim 61.
65. (original) A host cell comprising the vector of claim 64.
66. (original) The host cell of claim 65 wherein said host cell is NRRLB 30359.
67. (previously amended) A method for transforming a *Corynebacterium* species host cell comprising:

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- (a) transforming a *Corynebacterium* species host cell with the polynucleotide molecule of claim 61, and
- (b) selecting a transformed host cell.
68. (previously added) The method of claim 8 wherein said activity is aspartate-semialdehyde dehydrogenase activity.
69. (previously added) The method of claim 8 wherein said activity is dihydronicotinate synthase activity.
70. (previously added) The method of claim 8 wherein said activity is dihydronicotinate reductase activity.
71. (previously added) The method of claim 8 wherein said activity is diaminopimelate dehydrogenase activity.
72. (previously added) The method of claim 8 wherein said activity is diaminopimelate decarboxylase activity.
73. (currently amended) The isolated polynucleotide of claim 16, wherein said additional *Corynebacterium* species lysine pathway gene is encodes the *asd* polypeptide of SEQ ID NO:4.
74. (currently amended) The isolated polynucleotide of claim 16, wherein said additional *Corynebacterium* species lysine pathway gene is encodes the *dapA* polypeptide of SEQ ID NO:6.
75. (currently amended) The isolated polynucleotide of claim 16, wherein said additional *Corynebacterium* species lysine pathway gene is encodes the *dapB* polypeptide of SEQ ID NO:8.

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76. (currently amended) The isolated polynucleotide of claim 16, wherein said additional *Corynebacterium* species lysine pathway gene is encodes the *ddh* polypeptide of SEQ ID NO:10.
77. (currently amended) The isolated polynucleotide of claim 16, wherein said additional *Corynebacterium* species lysine pathway gene is encodes the *lysA* polypeptide of SEQ ID NO:21.
78. (currently amended) The isolated polynucleotide of claim 16, wherein said additional *Corynebacterium* species lysine pathway gene is encodes the *lysA* polypeptide of SEQ ID NO:14.
79. (currently amended) The isolated polynucleotide of claim 16, wherein said additional *Corynebacterium* species lysine pathway gene is encodes the *ORF2* polypeptide of SEQ ID NO:16.
80. (currently amended) The method of claim 68, wherein said aspartate-semialdehyde dehydrogenase activity is encoded by the *asd* polypeptide polynucleotide of SEQ ID NO:4 3.
81. (currently amended) The method of claim 69, wherein said dihydروpicolinate synthase activity is encoded by the *dapA* polypeptide polynucleotide of SEQ ID NO:6 5.
82. (currently amended) The method of claim 70, wherein said dihydروpicolinate reductase activity is encoded by the *dapB* polypeptide polynucleotide of SEQ ID NO:8 7.

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83. (currently amended) The method of claim 71, wherein said diaminopimelate decarboxylase activity is encoded by the *ddh* polypeptide polynucleotide of SEQ ID NO:10 9.
84. (currently amended) The method of claim 72, wherein said diaminopimelate decarboxylase activity is encoded by the *lysA* polypeptide polynucleotide of SEQ ID NO:21 20.
85. (currently amended) The method of claim 72, wherein said diaminopimelate decarboxylase activity is encoded by the *lysA* polypeptide polynucleotide of SEQ ID NO:14 13.
86. (previously added) The method of claim 6 wherein the nucleotide sequence is integrated into said host cell's chromosome.